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AUTHOR Kick, Edward L.
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ABSTRACT

Findings from a new blockmodel (multiple-network) analysis of transnational economic and non-economic linkages are presented. World-system studies have frequently relied upon transnational economic relations as the sole or primary delimiter of world-system structure, but the basic assumption of this study is that economic and non-economic links better reveal the form and operation of the world system. In this blockmodel analysis of world-system structure, network data for 129 nations are utilized and international interactions encompassing eight forms of economic, political, military, sociocultural, and technical linkages are examined. Countries are then "partitioned" into 11 blocks. Results are compared with those provided by Snyder and Kick (1979), in which 118 countries were partitioned into 10 blocks. Findings show that transnational tie patterns across economic and non-economic networks resemble one another rather closely, indicating that power-dependence relations are relatively uniform across different international interactions, and that power-dependence ties are mutually supportive. Results of the multiple-network analysis reveal two distinct semiperipheries, one socialist and one capitalist; the findings reveal core socialist and capitalist semiperipheral social systems, as well as socialist-capitalist contention for dominance over the larger world system. The implications of these findings for social change of the systems are discussed, as well as recommendations for further research. (Author/IS)

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THE FORM AND OPERATION OF THE WORLD SYSTEM:
A MULTIPLE-NETWORK ANALYSIS OF TRANSNATIONAL LINKAGES,
1960-65.

Edward L. Kick

(University of Utah)

Paper presented at the Annual Meeting of the American Sociological Association
(79th, San Antonio, TX, August 27-31, 1984). Research partially sponsored by
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ABSTRACT

This study extends Snyder and Kick's (1979) treatment of the form and operation of the modern world system. Findings are presented from a new blockmodel analysis of transnational economic and non-economic linkages. The substantive point of departure concerns the frequent reliance in world-system studies upon transnational economic relations as the sole or primary delimiter of world-system structure. It is argued that together, economic and non-economic links better reveal the form and operation of the world system. This claim is considered in light of the network results, which point to socialist and capitalist semiperipheries, socialist and capitalist social systems, and socialist-capitalist contention for dominance over the larger world system. The implications of these findings for social change of the systems are discussed.

In their study of the world system and national economic growth, Snyder and Kick (1979) question the empirical status of world-system/dependency arguments and prior quantitative tests of them. They contend (1979, pp. 1101-1103) that while the concept "structural position in the system" is central to world-system arguments, earlier treatments provide no clear and cogent operational criteria for determining the number of structural positions in the system (e.g., "core," "semiperiphery," "periphery") and no precise rules for classifying nations into them. Moreover, they maintain (1979, p. 1102) that the frequent usage of continuous dependency variables (e.g., investment dependence, trade concentration--Robinson 1976, Delacroix and Ragin 1978) as measures of world-system position is dubious. Relational measures based on the origins and destinations of transnational flows more fully specify the institutional locus of international interactions and better represent system structure and nations' positions in it.

In line with these arguments, Snyder and Kick (1979) use results from a multiple-network analysis of transnational economic and political-military relations (exports, diplomatic flows, military interventions, defense agreements) to identify the structure of the world system circa 1965. Their blockmodel analysis partitions 118 countries into ten blocks that are conceptually collapsed into three--core, semiperiphery, periphery--on the basis of overall similarities in their transnational linkages. Their partitioning of the system into core, semiperiphery, and periphery structural locations is consonant with standard world-system and dependency themes (Wallerstein 1974a; Frank 1968). Their classification of countries also has been employed in studies that examine the effects of structural position on national economic growth (Snyder and Kick 1979, Nolan 1983), demographic attributes (Nolan and White 1983), income inequality (Nolan 1983), political

democracy (Bollen 1983), and political conflict (Kick 1983).

This paper extends Snyder and Kick's study of the structure of the world system. The validity of their most central criticisms about this research area is assumed, and those criticisms are not further developed. However, new and related issues are raised. It is argued that the nearly exclusive focus in this line of research on global economic dynamics has led to overly simplistic understandings of the form and operation of the modern world system. What is missing in many conventional world-system and dependency studies is due consideration of non-economic links between nations as well. These links more clearly identify some key structural dynamics in the system, including discrete socialist and capitalist semiperipheries and the existence of two primary social systems that are in contention for world domination. What also is missing is adequate argumentation relating this contention to global social change.

These issues form the point of departure for a new blockmodel analysis of world-system structure. The multiple-network analysis is a logical extension of Snyder and Kick's previous work. Network data for 129 nations are utilized and the international interactions examined encompass eight forms of economic, political, military, socio-cultural and technological linkage. The new network results are compared with those presented by Snyder and Kick, and are used to address the argumentation about separate socialist and capitalist semiperipheries and competing social systems in the larger world system. The implications of the results for global social change also are considered.

Economic and Non-Economic

Approaches To World-System Structure

Snyder and Kick argue that relational operationalizations are most appropriate for identifying world-system structure and countries' positions in it, but controversy over the choice of suitable relational measures has

emerged. For example, Delacroix and Ragin (1981, p. 1322) contend that Snyder and Kick's usage of transnational political and military linkages (diplomatic flows, defense agreements, military interventions) may betray the logic inherent in dependency theory. Their position appears to be consonant with the focus of many world-system and dependency writers. Most world-system and dependency authors adopt approaches that emphasize that all-embracing importance of transnational economic flows (Wallerstein 1974a, 1974b; Frank 1980; Chase-Dunn 1975). Often accompanying this emphasis is an overly simplistic portrayal of world-system processes.

For instance, Wallerstein (1974b, p. 390) identifies one world social system that for centuries has been a capitalist world economy. Within that economy, power-dependence linkages among geopolitical units are reflected in an international division of labor that encompasses core, semi-peripheral and peripheral countries. Core nations, including the major powers of the West and possibly the Soviet Union (Wallerstein 1974a, p. 413), dominate global production by virtue of their domestic and international economic strength. In the short run at least, they thereby ensure their economic diversity, wealth and relative independence from outside control. Countries on the periphery of the system, the majority of lesser-developed nations in Latin America, Africa and Asia, are economically exploited by the core (and to a lesser extent, by the semi-periphery) and suffer from related domestic economic weaknesses.

Semi-peripheral nations occupy an intermediate position in the system between the core and periphery. According to Wallerstein (1976, p. 465), the semi-periphery is composed of a wide range of countries that vary in economic strength and political background (e.g., the economically stronger countries of Latin America; Israel and several Arab states; Nigeria and Zaire; in Asia, Turkey, Iran, India, Indonesia, China, Korea and Vietnam; portions of the "old

White Commonwealth"; in Western Europe, Portugal, Spain, Italy, Greece, Norway and Finland; and most of eastern Europe). The middle position of semi-peripheral nations in the world economic system is perpetuated by the semi-periphery's economic exploitation of the periphery (e.g., exchange of finished goods for raw material products) and by their economic dependence upon the core. Despite the attempts of the socialist semi-periphery countries to enact non-capitalist modes of national production, they are, according to Wallerstein, intimately a part of the capitalist world economy. Indeed, "there are today no socialist systems in the world-economy any more than there are feudal systems because there is only one world system...a world-economy and it is by definition capitalist in form" (Wallerstein 1974a, p. 405). Further, the semi-periphery, including its socialist members, helps to generate political stability in the system insofar as it is a de-polarizing force that inhibits unified opposition to core control of the world economy. The concentration of military strength in the core and the global pervasiveness of an "ideological commitment" to the system as a whole impede unified challenge to core control, but neither would suffice were it not for the "division of the majority into a larger lower stratum and a smaller middle stratum" (Wallerstein 1974a, pp. 404-405).

Similarly, A. Gunder Frank (1980) delimits a capitalist world economy where unequal economic exchange linkages (the exchange of raw materials for manufactured goods) identify a three-tiered hierarchical system. For Frank, the system is composed of the "First World" industrialized West, the "Second World" of Eastern socialist countries, and the "Third World" of lesser-developed capitalist countries of the South (which for Frank 1981, pp. 1-61, also include advanced "semi-peripheral" nations, such as Brazil, Mexico, Argentina, India, Iran, Israel and South Africa). Also for Frank, as for Wallerstein, the socialist "Second World" is fully integrated into the

capitalist world system owing to the (exploitative) economic linkages it maintains with both the First and Third Worlds: "There is only one world market, the capitalist one. The so-called socialist economies...are being (re)integrated into this capitalist market as buyers, sellers and producers...The socialist East occupies an intermediate place in the international division of labor between the capitalist West and the Third World South" (Frank 1980, p. 178). In fact, Frank argues that the integration of socialist societies into the capitalist international division of labor has accelerated recently, in part as a response to the crisis of the world capitalist system as a whole. The integration is reflected in appreciable levels of East-West trade, East-West cooperation in industrial production, and the economically-motivated similarity in their voting on international issues. And the integration is significant for Frank (as for Wallerstein), because the socialist bloc thus is seen as a impediment to a new socialist world order (see, in particular, Frank 1980, pp. 178-262). Indeed, "...the cause of socialist revolution in the Third World is not furthered by, but instead is often sacrificed to, these economic ties and related political interests and obligations." (Frank 1980, p. 178).

While Wallerstein, Frank and others (Steiber 1979; Robinson 1976; Delacroix and Ragin 1978) have relied primarily upon transnational economic relations or national economic attributes to identify the form and operation of the world system, there is ample reason to operationalize the system across non-economic lines as well. Power-dependence relations in other social systems (groups, organizations, societies) rarely hinge on mechanisms of economic exchange only (Emerson 1962; Cook et al. 1983, pp. 299-303; Blau 1955, 1964; Gamson 1968, pp. 59-109). It is not a priori certain that power-dependence relations in the world system are markedly different. Moreover, it is empirically uncertain, but plausible, that non-economic and

economic dimensions of transnational interaction are mutually reinforcing (Bergesen 1983; Chase-Dunn 1980, 1981; Chirot 1977; Galtung 1971; McGowan 1981; Szymanski 1981; Wallerstein 1974a, p. 404). It is additionally likely that power-dependence relationships may ultimately spring from different non-economic forms of transnational linkage (e.g., the global political-military activities of the Soviet Union--see Galtung 1971, p. 91).

Non-economic relations between countries may also reveal a number of central dynamics in the system that are not as clearly delimited by examination of transnational economic linkages only (Boli 1980; Skocpol 1979). For instance, in the post-World War II era international transport and communications, socio-cultural, and political and military relations arguably identify a world system that encompasses distinct socialist and capitalist semiperipheries with different structural roles in the system. They may also show a system that is (virtually) all-embracing, but composed of two predominant social systems (versus, e.g., the emphasis in Wallerstein 1974a, 1974b; Chirot 1977, pp. 228-233; Frank 1980). It is probable that they additionally highlight a key dynamic in the system that with a few exceptions (Chirot 1977, pp. 116-181; Kick 1983) is underelaborated in world-system and dependency writings: the contention between core capitalist countries (with their allies) and socialist semiperipheral countries (with their allies) for dominance over the system. This contention is fundamental insofar as it reflects processes central to the operation of the system and to system change. These issues are treated more fully in the multiple-network procedures, findings, and discussion that follow.

MULTIPLE-NETWORK ANALYSIS OF THE INTERNATIONAL SYSTEM.

General Issues

The logic, procedures, and substantive utility of multiple-network ("blockmodel") analysis, in general, are well enough established that they do

not require much elaboration here (for details and applications, see White et al. 1976; Boorman and White 1976; Breiger 1976; Mullins et al. 1977; Snyder and Kick 1979; Knoke and Kuklinski 1982). For present purposes, it is sufficient to note, first, that multiple-network analysis assumes that the social structure of a population of actors is specified by the multiple networks of interaction among them. In the present case, the assumption is that the structure of the international system is specified by the multiple linkages that connect nations. Second, structural positions ("blocks") are aggregates of actors who exhibit similar patterns of interaction across all relevant networks. The derivation of linkages simultaneously across all networks differentiates blockmodel analysis from more conventional (e.g., sociometric) approaches to social structure. Third, the presence or absence of ties among structural positions for each type of network relation guides inferences concerning the form and operation of the social structure. For instance, in a world system that is structurally ordered as "core-semi-periphery-periphery," we would anticipate system-wide linkages of dominance for the core, and between the semiperiphery and periphery.

The structure of the international system 1960-65 is operationally defined in this study with eight types of international interactions: trade flows, bilateral economic aid and assistance treaties, bilateral transportation and communication treaties, bilateral socio-cultural treaties, bilateral administrative and diplomatic treaties, political conflicts, armament transfers, and military conflicts.¹ Prior to the presentation of warrants for the choice of these blockmodel operators, procedures, sources and coding decisions are discussed.

Procedures

The eight networks are represented by separate $N \times N$ matrices of countries. Every matrix is coded in binary form with the cells (intersection of nations A

and B) in each matrix coded "1" for the presence of a tie or "claim" between countries, and "0" for the absence of such a tie. Blockmodel partitions of the 129 countries considered (see Table 1) are accomplished with the hierarchical decomposition algorithm CONCOR (CONvergence of iterated CORrelations-- see Breiger et al. 1975; White et al. 1976; Snyder and Kick 1979; Knoke and Kuklinski 1982, pp. 69-71), which splits the sample into increasingly more refined blocks of nations based on the similarities of their structural ties to all other nations across all eight networks simultaneously.

Sources and Coding Decisions

Trade Flows. Each country's yearly dollar value of exports to every other country is reported in "Direction of Trade" (DOT), a serial publication of the International Monetary Fund and the International Bank for Reconstruction and Development. Two accumulative DOT annuals for the years 1958-62 and 1962-66 were consulted. The criterion for the presence of an export tie is a value of \$50,000 or greater of exports from country A to country B in at least two of the six years 1960-65 inclusive. The \$50,000 figure (rounded up to \$100,000 by I.M.F.) is the lowest non-zero value reported for the 1960-65 period.²

Treaties. Peter Rohn (Treaty Research Center, Seattle, Washington) provided all the treaty data that are employed here. The treaty data, in general, encompass bilateral and multilateral treaty memberships across a wide variety of issue areas. They are taken from the United Nations Treaty Series and from various national treaty collections (see Rohn 1976, p. 10). Classification by issue areas (e.g., "Aid, "Administrative and Diplomatic" -- Rohn 1974, pp. v-xii) was accomplished by a contextual analysis of each treaty, leading to the identification of "dominant themes" (Rohn 1976, p. 11). For present purposes, only bilateral agreements between nations that were signed, entered into force, or registered during 1960-65 are utilized. The criteria

for a tie for each treaty type is at least one conjoint (bilateral) treaty membership between nations A and B during the 1960-65 period inclusive.

Economic Aid and Assistance Treaties: The economic aid and assistance treaties employed in this study comprise all agreements related primarily to foreign aid and technical assistance. Treaty titles occasionally do not identify the agreement as a donor-recipient relationship ("joint development agreement"). However, it typically is clear from the content of the treaty and differences in the wealth and developmental levels of the two parties involved that it is donor-recipient in nature (see Rohn 1976, p. 14). Economic aid and assistance treaties include, for example, agreements concerning technical assistance, direct aid, loans and credits, and agricultural commodities assistance.

Transportation/Communication Treaties: The bilateral transportation and communications treaty data used reflect agreements that relate to air, water and land transportation, and general communications, including postal service, telecommunications and mass media.

Socio-Cultural Treaties: Socio-cultural treaties encompass intercountry cooperation over labor, sanitation and humanitarian matters. They further include agreements concerning student transfers, exchange of cultural artifacts and research personnel, and joint participation in scientific projects.

Administrative and Diplomatic Treaties: The bilateral administrative and diplomatic treaty data refer to intercountry political cooperation across issues such as general relations and friendship, status/recognition of states, diplomatic and consular relations, privileges and immunities, and dispute settlement.

Political Conflict. The Conflict and Peace Data Bank (COPDAB) project, under the direction of Edward Azar, is a comprehensive survey of approximately

500,000 daily event records on cooperation and conflict between nations from 1948 to current. COPDAB utilizes over 70 international sources to code dates, "actors" and "targets," and event descriptions for international interactions among 135 countries. The interactions covered include political, social, military, and economic events.³ Included in COPDAB, and used here, are conflictual international events such as: protests over foreign policy decisions, allegations of spying, refusal of visas, ambassadorial recalls, breaking of diplomatic relations, granting of sanctuary to terrorists and opposition leaders from other countries, and financing guerrilla activities and inciting riots and rebellions in other countries. The criterion for a tie is any conflictual political event such as these between nations A and B for the 1960-65 period.

Armament Transfers. The Stockholm International Peace Research Institute (SIPRI 1975) presents information from 1950 through the mid-1970s on yearly, country-to-country transfers to the Third World of conventional weaponry. Conventional weaponry includes aircraft, naval vessels, missiles and armored fighting vehicles. SIPRI "worksheets" (available from SIPRI upon request) also contain information on conventional armament transfers among NATO, WARSAW PACT and other Western and Eastern suppliers and receivers for the mid-1940s to mid-1970s. When taken together, both sources provide reasonably comprehensive coverage of major arms transactions (for discussion, see Brzoska 1982). However, six Western industrial recipient nations (Canada, Denmark, Italy, Japan, Netherlands, Norway) and four Warsaw Pact recipient nations (Czechoslovakia, East Germany, Hungary, Poland) were omitted for 1960-65 in the "worksheets" provided by SIPRI. For these countries information from the U.S. Department of State (1975) was obtained.

The criterion for an arms linkage is the transfer from nation A to nation B of at least one conventional weapon during the 1960-65 period inclusive.

For those Western and Eastern arms importers for which SIPRI information was not available, the criterion for a claim was the export from nation A to nation B of over \$5 million of arms during the 1960s. The \$5 million figure is somewhat arbitrary, but in eliminating small transactions it should adequately reflect the cooperative military linkages measured by this operator.

Military Conflict. The COPDAB project referred to above also codes daily event information on intercountry military hostilities. These include air battles, mining of territorial waters, interception or sinking of ships, armed land clashes and border skirmishes, and the assassination of political leaders. The criterion for a tie is any hostile military act such as these between nations A and B during the period covered.

Warrant

Virtually all world system and dependency writers emphasize the centrality of transnational economic linkages, including trade and aid ties, in their approaches to the form and operation of the world system. Of course, if one were to attempt to explicitly employ those international linkages that best parallel world-system and dependency themes, networks embodying specific commodity flows, origin-destination investment ties and monetary figures for the value of donor-recipient economic assistance links probably would be optimal. However, for present purposes data availability constraints preclude the use of these alternative operators. For the 1960-65 period information on the flow of commodities and investments is available only for a sample of nations that is much smaller in size than that used here. Economic assistance flow data for the early 1960s for Western donors is not disaggregated for many of their (former) colonial recipients (O.E.C.D. 1977), and available information for Eastern bloc aid donors is aggregated for the 1954-66 period and solely presented for that bloc as a whole (U.S. Department of State 1976).

Relatively fewer world-system and dependency writers focus upon trans-national political and military linkages. Nevertheless, it is arguable that political and military dynamics crucially identify and affect the form and operation of the world system (Modelski 1978; Zolberg 1981; Ray 1983; Galtung 1971; Chirot 1977; Chase-Dunn 1980; Szymanski 1981).⁴ For example, cooperative political ties between states facilitate the flow of information concerning local political, economic and strategic conditions. For states at the core of the information network they provide a critical means for the global manipulation of those conditions. In contrast, interstate political conflict, at least in part, negates that flow. It often additionally reflects attempts by conflict "initiators" to undermine the domestic and international viability (i.e., position in the system) of conflict targets. Similarly, the sale or donation of conventional armaments is a major mechanism by which arms patrons may, by proxy, police much of the system that is geographically remote from them (e.g., Israel, Saudi Arabia, Iran under the Shah, Cuba). Armament transfers also promote the local leverage of "donors," which is used for later political, strategic, and economic concessions (Albrecht et al. 1974; Oberg 1975). Military conflict, particularly armed intervention, is by comparison a directly employed tool for subverting or supporting the polity in target countries. It often serves as a functional alternative to other economic and non-economic control mechanisms when they fail (Galtung 1971, p. 100). And it provides a major means for affecting the regional and global power balances that partly determine the international economic, political and strategic power of initiators and recipients (Kick 1983).⁵

While the foregoing may constitute a general warrant for the inclusion of political and military links between states that are cooperative or conflictual in nature, warrant for the choice of the specific networks selected requires some discussion. Bilateral administrative and diplomatic treaties

are used instead of particular forms of political cooperation (e.g., diplomatic exchanges -- see Snyder and Kick) because, relative to any single type of political tie, they better encompass the multiple forms of "friendly" political relations that identify the structural dynamics of the international system. The political and military conflict networks are similarly embracing. A comparable warrant cannot be given for the arms transfers operator, since it is only one of many types of cooperative interstate military arrangement. Nonetheless, it is reasoned that weapons transfers probably are one of the most important forms of cooperative military linkage among states. Also, available information for them is at least partially reliable (as opposed to, for instance, the sketchy data available on foreign troop presence, and military aid and personnel training).

Finally, transnational transportation/communications and socio-cultural ties even less frequently occupy a predominant position in world-system and dependency treatments of international system structure. However, they are jointly included here due to their clear substantive importance (Galtung 1971; Szymanski 1981; Delacroix and Ragin 1978). The international division of labor in transport and communications unambiguously favors center nations which employ their broader access to other countries in order to sustain or improve their relative economic, political and military positions in the system. For instance, widespread transportation and communication networks permit the gathering of information about local investment and marketing conditions. They help ensure the physical access to geographically distant areas that is vital to the establishment of a local inexpensive work force and production, marketing, and purchasing facilities. They greatly assist in the generation of demand for foreign products. They also provide extensive knowledge about political and strategic events across the world and facilitate physical access meant to affect the course of those events. Consider also the

real and potential global control associated with the "production" and dissemination of news on a worldwide basis to receivers who for all practical purposes are dependent upon one external news source only.

Socio-cultural ties similarly buttress existing power-dependence linkages in the system. They help ensure the availability of labor for foreign enterprises and are used to pull intellectual talent (the "brain drain") to already dominant international actors. They further technical ties (scientific projects) between donors and recipients that with ever-mounting technological advances increase the technical, and related economic, political and military dependency of client countries upon their external sponsors. Socio-cultural links are in addition a commonly employed and potentially powerful mechanism for the "socialization" of dependent populations (e.g., student and research personnel exchanges). They are used in part to reinforce ideological conformity between host and sender countries and to guarantee the future stability of economic and political-military alignments between them.

MULTIPLE NETWORKS RESULTS

Block Memberships

The CONCOR partitions of the eight networks described above resulted in the eleven clusters of nations represented in Table 1. CONCOR ultimately generates N (in this case, 129) blocks, because it partitions until the most refined solution is found--discrete blocks for each unit (country). Results from the eleven-block partition (versus, say, a two-block or twenty-bloc solution) are presented because they best capture substantively important but not unwieldy information.⁶

(Table 1 about here)

The block memberships depicted in Table 1 are largely what one would expect on the basis of arguments concerning the existence of core, semi-periphery, and periphery positions in the world system. Blocks 1 through 11

are ranked in a roughly hierarchical way in anticipation of the discussion of interblock ties that follows, and show: a block of Western industrial countries (block 1 -- the "core"); a block of Eastern socialist countries (block 2 --the "socialist semiperiphery"); a block of primarily capitalist, industrializing countries (the "capitalist semiperiphery"); three (4-6) blocks of "advanced" lesser-developed countries ("advanced periphery"); and remaining blocks (7-11) that include virtually all of the poorer, lesser-developed countries ("periphery").

Interblock Linkages

On partially intuitive grounds block memberships may be used to generate inferences about the operation of the international system. But it is in conjunction with information on the (breadth) of linkages between blocks across each network that they provide most guidance on the form and operation of the system. Table 2 presents those linkages in light of the origin (columns)/destination (rows) "densities" of interaction between (and within, see diagonal) blocks for each network operator. The density scores in each cell in Table 2 show the proportion of actual (scored "1" in the original coding) relative to possible linkages between the countries in pairs of blocks. For example, in the exports matrix all block 1 members export to one another (1.00), while block 1's exports to block 11 were significantly more marginal (.328).⁷

[Table 2 about here]

In the exports density matrix block 1 maintains comparatively dense export and import ties to all of the other blocks. Indeed, with only a few exceptions (e.g., intrablock import ties for block 2) the Western industrial nations uniformly are the chief exporter and importer block for all others in the system. By comparison, the trade linkages for blocks 7-11 are quite a bit

narrower. These blocks of "true periphery" countries are tied into the international trade network primarily through their dependency on the core, and then blocks 2-4.

Blocks 2 and 3 occupy an intermediate position in the trade network. The breadth and density of their trade linkages are overall less than block 1, but greater than blocks 4-11. This suggests that the designation "semiperiphery" (vis-a-vis international trade) may be aptly applied to them. Intermediate between the semiperiphery and the "true periphery" are blocks 4-6. While the term may more properly apply to national developmental attributes, these blocks may be said to occupy an "advanced peripheral" position in the global system.⁸ It is noteworthy that despite their common position in the system, block 4's export/import linkages differ from those of 5 and 6. Block 4 is strongly tied in trade to the socialist semiperiphery, but 5 and 6 are not.

The (symmetrical) densities in the aid and assistance (e.g., loans, technical assistance) matrix indicate again the international economic centrality of the Western industrial nations. In every case the core block is at least modestly joined through assistance agreements to the rest of the system. Again also, peripheral blocks 7-11, and to a lesser degree 4-6, are tied into the transnational aid network mainly through their economic assistance dependency on the Western core and/or the socialist semiperiphery. Unlike the patterns depicted in the trade matrix, block 3's ("capitalist semiperiphery") aid and assistance interconnections are not as widespread as those of the socialist semiperiphery. Block 3 maintains aid and assistance power relations with the periphery that are not markedly different from blocks 4, 5, and 6.

It is notable that the highest aid and assistance densities occur within the socialist semiperiphery (.318) and between it and block 8, which is composed of several other socialist and socialist-aligned states (e.g., for

the 1960s, Somalia). These patterns are not as clearly visible in the exports matrix where there is appreciable West-East trade and core export ties to block 8 exceed those of the socialist semiperiphery. Pending examination of the other matrices, it may be argued that this reflects the existence of a socialist sub-system with its own center (block 2) and periphery (block 8). Also, although block 4 is dependent upon aid and assistance flows from both the core and socialist semiperiphery, blocks 3, 5, 7, and 9-11 are recipients of core but not socialist semiperipheral aid.

The transportation and communications (e.g., geographical access, news) density matrix reveals a structure that closely resembles those that emerge for the economic networks. Western industrial countries occupy a position of power at the center of the network, followed roughly by the socialist semiperiphery and the capitalist semiperiphery, then the advanced and true peripheries. There are other dynamics evident in the transportation and communication network that are important for subsequent discussion. First, intrablock linkages for the core and socialist semiperiphery predominate, but there is at least a marginal propensity for the core block to be tied to blocks 3, 5, 6, 7, 9 and 11. Second, while blocks 4 and 8 are linked to both the core and socialist semiperiphery, they are most strongly tied to the latter.

The socio-cultural network (e.g., labor/student exchange) shows comparable patterns. Global socio-cultural relations are dominated by the capitalist core, and to a lesser extent the socialist and then the capitalist semiperiphery. The remaining blocks are for the most part less well integrated into the socio-cultural system. They are tied to it primarily through their transnational interactions with the Western capitalist and socialist semiperipheral blocks. Again, aside from their monumentally greater

intrablock connections, the core is most closely linked with blocks 3, 5, and 9, and the socialist semiperiphery is most strongly bonded to 4 and 8.

The structure of the administrative and diplomatic network (e.g., diplomatic relations) approximates the structure of the international economic, transportation/communication and socio-cultural networks. Blocks 9-11 are on the periphery of the system. Blocks 4-8 are only slightly more integrated. The Western core, and to a lesser degree the socialist and capitalist semiperipheries, dominate in their control over cooperative political arrangements. Strong intrablock bonds for the core and socialist semiperiphery once more are evident, as are core links to blocks 3, 5, 7, and 9, and the socialist semiperiphery's ties to 4 and 8. Also, in contrast to network ties for the exports operator, for blocks 3, 5-9, and 11 there is a clear tendency to be bonded either to the core or the socialist semiperiphery.

The political conflict network (e.g., protests, spying, support of guerillas) also is "dominated" by the core. The core receives and initiates much of the hostile political activity in the system as a result of its widespread exercise of economic and political-military power. Further, the core and socialist semiperipheral blocks exhibit comparatively high levels of intrablock political hostility and typically are more closely locked in political conflict with one another than they are with other system members. The capitalist semiperiphery and to a lesser degree block 4 additionally initiate (and receive) a good deal of the conflict in the international arena, more so, generally, than the remaining blocks. Although 3 and 4 jointly direct their political hostilities to the core more than the socialist semiperiphery, block 3 is a primary target of the socialist semiperiphery and block 4 is a more frequent target of the core.

Armament transfer patterns show, as one would expect, that Western industrial countries and the socialist semiperiphery virtually monopolize the

flow of conventional weaponry in the system. With minor exceptions, blocks 3, 5-7, and 9-11 are entirely dependent upon core arms sellers. Apart from strong intrablock linkages for the core, blocks 3 and 5 (and 4 and 6) are the most salient arms receivers for the core. Aside from strong intrablock linkages for the socialist semiperiphery, block 8 and block 4 are the major recipients of socialist semiperiphery weapons. In contrast to patterns in most prior networks (except for exports) block 8 is roughly equally linked to both the core and socialist semiperiphery in arms transfers. Block 4 also is strongly tied to core arms sponsors, despite its greater relations with the socialist semiperiphery in the other non-economic networks. These patterns may reflect shifts during the period covered in the arms patrons for many of the peripheral countries in these blocks, the widespread international demand for weapons independent of source, and/or the comparative absence of geopolitical concerns in the arms transfer policies of some core states (e.g., France).

Finally, the military conflict network (e.g., military interventions, wars) once more reveals that peripheral blocks 9-11 are virtual "outliers" in the world system. They initiate and receive only trivial amounts of foreign military activities. However, the other peripheral blocks often are targets of military actions initiated by their peripheral counterparts (in blocks 4-8) and even more frequently by the capitalist core and socialist semiperiphery. Along with blocks 3, 4, and 6, the core and socialist semiperiphery clearly "police" much of the system. The military activities the core and socialist semiperiphery initiate also tend to be somewhat greater than those that they receive (disproportionately so for the socialist semiperiphery).

The most salient military targets of the capitalist core are: a) its major political-military competitor in the system, the socialist semiperiphery; b) block 4, which is more strongly tied to the socialist semi-

periphery than the core in the transport/communication, socio-cultural and political networks; and c) the socialist semiperiphery's "periphery," block 8. Although there is some intrablock contention in the socialist semiperiphery, the primary target of the major socialist block and its periphery is the Western industrial core. Block 8 also directs much of its military attention to blocks 3, 5, and 6, which are strongly (particularly 3 and 5) linked to the core in the other networks examined. Reciprocally, block 8 is a frequent target of 3, 5 and 6. These conflicts and others (e.g., 4-6) revolve to an important extent around geopolitical (capitalist versus Eastern socialist) considerations. However, military conflict in the system also reflects colonial struggles (e.g., 1-6, 3-6) and hegemonic/territorial conflicts among adjacent peripheral countries (e.g., 5-7, 7-7, 6-9, 6-11).

DISCUSSION

When taken together, the blockmodel partition and network density information reveals a core block of Western industrial nations that dominate the international economic, transportation/communications, socio-cultural, political and military systems. Behind the core, a socialist semiperiphery and then a capitalist semiperiphery head the remainder of the system, composed of "advanced" and "true" periphery nations. The structural links that emerge for each of the networks examined are largely consistent with all others, which points to the stability of the global hierarchy across its multiple divisions of labor. While the findings identify a world system that is all-embracing, they also suggest that the system encompasses capitalist and socialist social systems. The political and military networks further indicate that the capitalist core and socialist semiperiphery are in many respects globally contending social systems, and linkages among the blocks

that are closely tied to them (i.e., 3,5,6 versus 8) identify more system-wide struggles between capitalist and socialist camps.

Many of the general features of the form and operation of the world system identified are consistent with those presented by Snyder and Kick. For instance, Snyder and Kick's findings also reveal a globally dominant core block of Western industrial nations, an intermediate or semiperipheral zone composed of less globally dominant socialist and capitalist countries, and a periphery that primarily encompasses the dependent and less-developed countries of Latin America, Africa, and Asia. Their results additionally disclose blocks of countries (C', D' -- see Appendix I) whose transnational linkages partially resemble both other peripheral and semiperipheral blocks (pp. 1114-1116).

It is uncertain whether the appearance of these latter blocks in both studies (blocks 4-6 here) signifies the existence of a "fourth tier" in the system. In many respects, the dependency of these blocks on the core and/or semiperiphery and the (comparative) absence of ties between them and the rest of the periphery strongly suggest peripheral status. This is precisely how they are treated here. Yet, the network linkages reported above also show that the mutual trade links among and within blocks 4-6, and their trade ties to blocks 1-3, are greater than those for the "true periphery." These findings suggest the possibility that there may be a fourth tier in the system intermediate between the semiperiphery and true periphery. This may account for what appear to be rather marked differences between them and the true periphery on some national attributes of interest (e.g., domestic development).

There also are some notable differences in the features of the world system depicted in this investigation and in Snyder and Kick's analysis. First, while the bulk of countries considered occupy identical structural locations (as core, semiperiphery, or periphery) in both studies, several

countries are assigned to different structural positions in the two treatments (e.g., in their study (1979, p. 1110) most of the Eastern bloc is semiperipheral, but Poland, Czechoslovakia and China are classified as peripheral). Although no lengthy effort can be made in this paper to interpret these differences, they likely result from the inclusion here of a larger and more varied set of transnational interactions.

Second, there are differences in the uniformity of structural relations across networks in the two studies. In Snyder and Kick's examination (pp. 1115-1116) inter-block linkages for the diplomatic and defense pact networks are somewhat inconsistent with linkages for the trade and interventions networks. Furthermore, the tie patterns shown in the diplomatic and defense networks are not overly helpful in differentiating the power-dependence positions of core, semiperipheral, and peripheral nations. This is less true for the blockmodel results presented in this study, which portray relatively congruent and interpretable structural links across all the networks examined. This consistency better captures the structurally reinforcing operation of central economic and non-economic dynamics in the system. It also better distinguishes the discrete power-dependence positions of the core, semiperiphery, and periphery.⁹

A final and significant dissimilarity in the two studies is in the treatment of the semiperiphery. Snyder and Kick's blockmodel partitions identify one (clearly) semiperipheral block composed of both capitalist and socialist countries. Consequently, they do not address structurally separate capitalist and socialist blocks. In contrast, the blockmodel findings presented above point to distinct capitalist and socialist semiperipheries, reveal capitalist and socialist social systems, and show power-dependence relations among capitalist countries and among socialist countries. These linkage patterns are fundamental. They may explain a great deal about the

domestic and international experiences of non-aligned (i.e., some of countries in block 4) and firmly East-aligned or West-aligned Third World nations (e.g., the ability of the non-aligned to gain benefits by playing the major patron blocs against one another; the arguably positive domestic economic returns to Eastern versus Western economic assistance -- see Szymanski 1979; the involvement of regional Eastern and Western "proxies" in Third World struggles).

In concert with the observation that much of the political and military conflict in the world system involves capitalist-socialist contention, these findings also bear on conventional world-system/dependency interpretations. Frank (1980) and Wallerstein (1974a, 1974b) identify one world system that encompasses both capitalist and socialist countries. They also tend to view the international economic activities of the semiperiphery, including its socialist members, as obstacles to system change culminating in a socialist world order. Their arguments rest mainly on the premise that the semiperiphery's integrated and intermediate role in the world capitalist division of labor impedes system polarization and inhibits effective challenge to global core dominance (Frank 1980, pp. 178-262; Wallerstein 1974a, pp. 403-406; 1976). The network results show transideological trade ties that are in principle consistent with these arguments. But the results also reveal non-economic dynamics that seem to point in the opposite direction. They identify a central axis of social change in the modern world system that may be closely related to the prospects for future world orders.

Consider, for example, Wallerstein's (1980) more recent arguments concerning the primary agents of social change of the system. Wallerstein (1980, p.179) maintains that "the structural contradictions of capitalism and the antisystemic movements it has bred in such force will continue to eat away at the entrails of the system." More precisely, economic constraints imposed

by increasing proletarianization and the incorporation of new zones into the world-economy "generate at the political level the rise of the antisystemic movements who are acting as the crucial social intermediary of global systemic change" (1980, p. 173). Wallerstein (1980, p. 174) notes that these typically nationalist/socialist movements create stronger state structures, and in so doing buttress the operation of the interstate system and thus reinforce capitalism as a world system. Nevertheless, Wallerstein (1980, p. 177) also observes that antisystemic movements serve as "inspiration" and "reinforcement" for subsequent movements, which force their predecessors to "compromise" less than they would otherwise be inclined. Given time, therefore, antisystemic movements may cumulatively transform the politics of the world-economy, undermine the viability of the world capitalist system, and facilitate the global transition from capitalism to socialism (Wallerstein 1980, pp. 177-179).

The network results in this study do not directly address these themes. Yet they provide some evidence that, again in principle, is compatible with Wallerstein's arguments (e.g., the existence of a socialist social system and socialist-capitalist struggle). Additionally, the findings are suggestive of a process that Wallerstein tends to neglect, but which may be central to his recent position. During the post-World War II era, the socialist semiperiphery and its dependent allies have actively challenged core control of the system, in part through the extensive provision of economic and non-economic resources to new antisystemic movements (e.g., much of South-east Asia, Africa, and portions of the Caribbean). Their support of these movements may be of equal or even greater importance for system change than some of the mechanisms that Wallerstein emphasizes. Discontent and anti-core ideological commitment spawned by the operation of the capitalist world economy, and the global presence of an alternative ideological model, may

establish the vital preconditions for antisystemic movements and system change. However, often it has been the external provision of resources by the major military opponents of the Western core that has permitted antisystemic movements to effectively challenge core presence and control.

Taken together, these processes continue in their importance despite the socialist semiperiphery's participation in the world economy and its transparently pragmatic support of some movements whose "progressive" nature has been seriously questioned (see Frank 1980, pp. 218-219). They also continue in importance despite periodic intrasocialist struggles and episodic detente between some Western and Eastern countries. Whether these dynamics signal the inevitable emergence of world socialism in its purest form is open to question (Chase-Dunn 1980, pp. 522-524). Nonetheless, they point to a neglected feature of the world system which crucially bears on its current operation and its possible futures.

CONCLUSIONS

The objective of this paper has been to question the overly restrictive focus on transnational economic ties in many world-system and dependency writings. Arguments were made that the nearly exclusive emphasis on economic linkages between countries hides dynamics central to the form, operation, and possible directions for social change of the world system. The multiple-network results provide support for these arguments. Transnational tie patterns across the economic and non-economic networks resemble one another rather closely, indicating that power-dependence relations are relatively uniform across different international interactions, and that power-dependence ties are mutually supportive. But in conjunction with the economic networks, the non-economic networks show key processes that frequently are overlooked in many conventional world-system and dependency treatments. The results

identify two distinct semiperipheries, one capitalist and the other socialist, which perform different roles in the world system. The findings reveal core capitalist and (Eastern) socialist semiperipheral social systems. They also show power-dependence linkages among capitalist countries, and among socialist countries, that occur in the context of an all-embracing world system. Further, the patterns point to socialist-capitalist contention reflecting a struggle for world domination that bears directly on the likelihood of alternative future world orders.

Despite their importance, these processes and their implications for geopolitical units and social change of the system as a whole remain underemphasized in most world-system and dependency studies. What is required are theoretical and empirical extensions that more comprehensively address global economic and non-economic forces, their interdependencies, and their relationships to system change and national properties. Subsequent efforts might consider in more depth the implications of two intermediate strata in the world system and the existence of what may well be a fourth tier of "advanced peripheral" countries. It would be profitable to address the consequences for Third World countries of non-alignment or predominant ties to Eastern versus Western sponsors. The mechanisms and implications of parlaying available international strengths on particularistic dimensions (e.g., military might) to achieve more multi-dimensional positions of global power (e.g., the U.S.S.R.) also bears exploration. Finally, it is vitally important that future efforts explicitly consider the multiple though interpenetrating logics encompassed in the structural division of the world into competing ideological camps, and the probable implications of these logics for subsequent world-system orders.

FOOTNOTES

¹The international interactions employed conform rather closely with those emphasized by Galtung (e.g., Galtung 1971, p. 91).

²There is an underreporting bias in the export figures that warrants attention. Export information for Warsaw Pact nations, Albania, China, Cuba, North Korea and North Vietnam, and twenty-seven additional countries is at least partially reconstructed from information supplied by their trading partners. In principle, at least, the use of entirely reconstructed data for all these countries might seriously underestimate the trade linkages among them. However, non-reconstructed data are presented for two years or more for most Warsaw Pact countries (all but Bulgaria and Hungary), and other trade linkages among the pool of socialist countries (including those outside the Warsaw Pact) are in addition coded from other available sources (Freedman 1970; Kohler 1966; United States Government 1967; Sachs 1963). Of the remaining 27 countries, only 15 had entirely reconstructed data or reconstructed data for more than three of the six years on which coding was based. Moreover, virtually all of these fifteen either had very few trade links with reporting nations as a whole or otherwise traded almost exclusively with advanced industrial countries that are nearly "full reporters". For these reasons, underreporting bias is unlikely to be very drastic.

³For discussion and empirical application of the COPDAB data, see Azar (1980) and Gasiorowski and Polachek (1982).

⁴Also, although they may frequently de-emphasize it, Wallerstein and Frank recognize the importance of political-military means for enforcing economic supremacy in the international system (see, e.g., Frank 1981, pp. 280-310).

⁵For instance, the post-World War II spread of frequently nationalist, "anti-core" revolutionary movements in the Third World is viewed by the capitalist core as threatening to its world economic and political-military

supremacy. The challenge to local elites who are sympathetic to world capitalism is simultaneously viewed as a challenge to the global control of core powers, and to the regional dominance capabilities of their non-core allies. What troubles the capitalist West is the increasing tendency for peripheral societies to revolt, be closed off to core penetration, and ally with major power socialist countries (China, the Soviet Union) who are challenging the core for global dominance. These tendencies, in the perceptions of core states, jeopardize core interests in the international system. In response to anti-core social movements, Western states have instituted large economic aid and military assistance programs, and have provided conventional and non-conventional weaponry to West-leaning repressive regimes. In concert with the proximal Third World allies, they also have resorted to military intervention on behalf of governments (or occasionally challengers) sympathetic to world capitalism (see Chirot 1977, pp. 166-169; Szymanski 1981, pp. 117-216; Kick 1983). These actions often have co-occurred with related support from the socialist semiperiphery for counter-core movements. This involvement has included provision of sanctuary, training, armaments, and economic assistance (e.g., Soviet aid to insurgents in Indochina), but occasionally it has also encompassed direct armed intervention. The interests of the socialist semiperiphery and those of their allies include local and international ideological goals, and concern over access to strategic facilities and the vast mineral resources of the periphery. They also include the objective of countering the regional and global dominance of the West.

⁶The choice of the eleven-block partition was primarily based on examination of block memberships and inter-block linkages for prior and subsequent partitions. For example, in earlier partitions the Eastern socialist countries (block 2) and several Middle Eastern countries (block 4) formed one

block. Only with later partitions were the substantively important distinctions in their transnational linkages apparent. Also, in earlier partitions the Western industrial countries of the core (block 1) were blocked with other industrializing countries (block 3). The subsequently discussed differences between these blocks is obvious and plainly emerged upon examination of the patterns of block linkages for them in later partitions (i.e., partition eleven). Even more refined solutions provide additional information that is useful. However, their usage would not materially change the conclusions of interest presented here. Moreover, visual examination and interpretation of these more refined solutions is extremely tedious (see Table 2). Interested readers nevertheless are encouraged to write for results from these later partitions.

⁷Binary image matrices are not presented, but may be constructed from the density matrices by comparing cell densities with some arbitrarily selected criterion point, usually the mean network density (see Snyder and Kick, p. 1110).

⁸Although the transnational linkages of blocks 4-6 differ from 7-11 in the exports matrix and in others to be considered, it is uncertain whether these differences are sufficiently marked to warrant the use of a new structural designation for blocks 4-6 (e.g., "quasi-periphery").

⁹This is not to suggest that linkages across networks perfectly duplicate one another. They do not, and these variations may be substantively interesting. For example, blocks 4 and 5 are similarly tied to the core in the economic networks, but block 5 is more strongly linked to the core in the transportation/communication, socio-cultural, and political networks. This difference maybe helpful in explaining variations between blocks 4 and 5 in domestic political structure and conflict.

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Table 1

Listing of Countries in Each of Eleven Blocks from Eight-Network Blockmodel (Exports, Economic Aid and Assistance Treaties, Transportation/Communication Treaties, Socio-cultural Treaties, Administrative/Diplomatic Treaties, Political Conflicts, Armament Transfers, Military Conflicts) for 129 Countries, 1960-65

Block	Countries
1	Belgium, Canada, Denmark, France, West Germany, Israel, Italy, Japan, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom, United States
2	Albania, Bulgaria, China (Mainland), Cuba, Czechoslovakia, East Germany, Hungary, Poland, Romania, Soviet Union, North Vietnam, Yugoslavia
3	Argentina, Australia, Austria, Brazil, Finland, Greece, Iran, Ireland, Morocco, Pakistan, Portugal, South Africa, Turkey, Uruguay, Venezuela
4	Algeria, Burma, Egypt, Ghana, India, Indonesia, Iraq, Lebanon, Libya, Sri Lanka, Sudan, Syria, Tanzania, Tunisia
5	Chile, Colombia, South Korea, Mexico, Panama, Peru, Philippines, Trinidad/Tobago, South Vietnam
6	Angola, Bahrain, China (Taiwan), Cyprus, Ethiopia, Jordan, Kenya, Kuwait, Malaysia, Mozambique, New Zealand, Nigeria, Saudi Arabia, Singapore, Thailand, South Yemen, Zaïre
7	Bolivia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Gambia, Guatemala, Guyana, Haiti, Honduras, Jamaica, Liberia, Malta, Nicaragua, Oman, Paraguay, Qatar, United Arab Emirates
8	Afghanistan, Cambodia, Guinea, North Korea, Laos, Mali, Nepal, Somalia, North Yemen
9	Cameroon, Ivory Coast, Madagascar, Mauritania, Sierra Leone, Uganda
10	Rhodesia, Zambia
11	Benin, Burundi, Central African Republic, Chad, Congo, Gabon, Malawi, Niger, Rwanda, Senegal, Togo, Upper Volta

Table 2. ELEVEN-BLOCK DENSITIES

EXPORTS (Mean Density = .299)

	1	2	3	4	5	6	7	8	9	10	11
1	1.00	.84	.973	.924	.896	.898	.700	.370	.644	.400	.328
2	.856	.894	.656	.690	.130	.260	.023	.222	.125	.000	.021
3	.987	.628	.805	.557	.504	.439	.159	.052	.122	.133	.022
4	.862	.607	.429	.374	.103	.256	.032	.071	.083	.107	.036
5	.844	.185	.378	.135	.417	.118	.111	.012	.000	.000	.009
6	.843	.225	.420	.273	.163	.290	.007	.052	.049	.118	.015
7	.656	.014	.100	.012	.093	.029	.078	.006	.000	.000	.000
8	.304	.185	.044	.048	.025	.052	.000	.000	.056	.000	.019
9	.644	.097	.100	.131	.000	.078	.000	.037	.033	.000	.139
10	.400	.000	.133	.107	.000	.118	.000	.000	.000	.500	.083
11	.439	.007	.072	.018	.000	.020	.000	.009	.069	.083	.038

AID AND ASSISTANCE TREATIES (Mean Density = .047)

	1	2	3	4	5	6	7	8	9	10	11
1	.162	.067	.191	.214	.230	.090	.085	.141	.211	.033	.217
2	.067	.318	.044	.161	.000	.025	.000	.278	.028	.000	.028
3	.191	.044	.029	.010	.000	.000	.011	.000	.000	.000	.000
4	.214	.161	.010	.000	.008	.008	.000	.008	.000	.000	.000
5	.230	.000	.000	.008	.000	.007	.006	.000	.000	.000	.000
6	.090	.025	.000	.008	.007	.000	.000	.000	.000	.000	.000
7	.085	.000	.011	.000	.006	.000	.000	.000	.000	.000	.000
8	.141	.278	.000	.008	.000	.000	.000	.028	.000	.000	.000
9	.211	.028	.000	.000	.000	.000	.000	.000	.000	.000	.000
10	.033	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
11	.217	.028	.000	.000	.000	.000	.000	.000	.000	.000	.000

TRANSPORTATION/COMMUNICATION TREATIES (Mean Density = .053)

	1	2	3	4	5	6	7	8	9	10	11
1	.381	.150	.227	.119	.200	.137	.081	.133	.178	.000	.089
2	.150	.439	.117	.179	.000	.015	.000	.185	.000	.000	.014
3	.227	.117	.095	.019	.015	.020	.019	.015	.000	.067	.011
4	.119	.179	.019	.033	.008	.004	.004	.040	.000	.000	.006
5	.200	.000	.015	.008	.028	.007	.006	.000	.000	.000	.000
6	.137	.015	.020	.004	.007	.007	.000	.007	.000	.000	.000
7	.081	.000	.019	.004	.006	.000	.000	.000	.000	.000	.000
8	.133	.185	.015	.040	.000	.007	.000	.056	.056	.000	.019
9	.178	.000	.000	.000	.000	.000	.000	.056	.000	.000	.000
10	.000	.000	.067	.000	.000	.000	.000	.000	.000	.000	.000
11	.089	.014	.011	.006	.000	.000	.000	.019	.000	.000	.000

Table 2. (Cont.)

SOCIO-CULTURAL TREATIES (Mean Density = .043)

	1	2	3	4	5	6	7	8	9	10	11
1	.362	.133	.231	.090	.185	.067	.056	.074	.111	.067	.056
2	.133	.591	.078	.149	.009	.025	.000	.278	.028	.000	.056
3	.231	.078	.076	.005	.067	.012	.033	.000	.000	.000	.006
4	.090	.149	.005	.000	.008	.000	.000	.008	.000	.000	.000
5	.185	.009	.067	.008	.056	.020	.019	.000	.000	.000	.000
6	.067	.025	.012	.000	.020	.000	.013	.000	.000	.000	.000
7	.056	.000	.033	.000	.019	.013	.000	.000	.000	.000	.000
8	.074	.278	.000	.008	.000	.000	.000	.111	.019	.000	.009
9	.111	.028	.000	.000	.000	.000	.000	.019	.000	.000	.000
10	.067	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
11	.056	.056	.006	.000	.000	.000	.000	.009	.000	.000	.000

ADMINISTRATIVE/DIPLOMATIC TREATIES (Mean Density = .062)

	1	2	3	4	5	6	7	8	9	10	11
1	.457	.144	.271	.071	.259	.122	.219	.030	.211	.000	.106
2	.144	.561	.056	.131	.009	.020	.005	.204	.028	.000	.049
3	.271	.056	.219	.024	.104	.024	.052	.022	.011	.033	.000
4	.071	.131	.024	.000	.024	.017	.000	.000	.000	.000	.000
5	.259	.009	.104	.024	.028	.033	.019	.000	.000	.000	.000
6	.122	.020	.024	.017	.033	.007	.000	.007	.010	.000	.000
7	.219	.005	.052	.000	.019	.000	.007	.000	.000	.000	.000
8	.030	.204	.022	.000	.000	.007	.000	.028	.019	.000	.000
9	.211	.028	.011	.000	.000	.010	.000	.019	.000	.000	.000
10	.000	.000	.033	.000	.000	.000	.000	.000	.000	.000	.000
11	.106	.049	.000	.000	.000	.000	.000	.000	.000	.000	.000

POLITICAL CONFLICTS (Mean Density = .034)

	1	2	3	4	5	6	7	8	9	10	11
1	.076	.122	.036	.076	.022	.016	.022	.044	.011	.067	.011
2	.167	.129	.056	.012	.019	.025	.023	.009	.014	.083	.000
3	.093	.067	.057	.057	.052	.012	.041	.007	.000	.000	.000
4	.176	.024	.071	.099	.000	.055	.000	.016	.012	.071	.024
5	.067	.065	.030	.000	.028	.013	.031	.012	.000	.000	.009
6	.082	.020	.031	.046	.007	.004	.000	.026	.010	.000	.020
7	.044	.069	.022	.000	.025	.000	.056	.000	.000	.000	.000
8	.089	.000	.030	.024	.000	.007	.000	.014	.000	.000	.000
9	.033	.000	.044	.012	.000	.020	.000	.000	.133	.000	.167
10	.100	.000	.033	.000	.000	.000	.000	.000	.000	1.00	.042
11	.078	.007	.022	.024	.000	.025	.000	.009	.014	.042	.023

Table 2. (Cont.)

ARMAMENT TRANSFERS (Mean Density = .021)

	1	2	3	4	5	6	7	8	9	10	11
1	.290	.022	.231	.200	.185	.141	.056	.096	.111	.100	.072
2	.000	.189	.022	.089	.000	.020	.000	.111	.000	.000	.000
3	.009	.011	.005	.005	.000	.008	.007	.007	.000	.000	.000
4	.000	.000	.005	.016	.000	.004	.000	.008	.000	.000	.000
5	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
6	.000	.000	.000	.004	.000	.004	.000	.000	.000	.000	.000
7	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
8	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
9	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
10	.000	.000	.000	.000	.000	.029	.000	.000	.000	.000	.000
11	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

MILITARY CONFLICTS (Mean Density = .009)

	1	2	3	4	5	6	7	8	9	10	11
1	.000	.022	.009	.033	.007	.012	.007	.022	.011	.000	.006
2	.044	.015	.006	.006	.009	.010	.009	.009	.000	.000	.000
3	.004	.006	.019	.029	.007	.020	.007	.015	.000	.000	.000
4	.029	.000	.024	.027	.000	.021	.000	.016	.000	.000	.006
5	.000	.000	.007	.000	.000	.000	.006	.012	.000	.000	.000
6	.024	.000	.004	.034	.000	.007	.000	.020	.020	.000	.015
7	.007	.000	.004	.000	.012	.000	.029	.000	.000	.000	.000
8	.022	.000	.015	.008	.012	.020	.000	.000	.000	.000	.000
9	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
10	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
11	.000	.000	.006	.006	.000	.005	.000	.000	.000	.000	.000

Appendix I: Listing of Countries in Each of Ten World-System Blocks:
Four-Network Blockmodel (Trade, Interventions, Diplomats,
and Treaties) for 118 Nations Circa 1965--from Snyder and
Kick (1979)

Structural Position	Nations
A Periphery	Chad, Congo (Brazzaville), Congo (Kinshasa), Uganda, Burundi, Rwanda, Somalia, Ethiopia, Malagasy Republic, Morocco, Algeria, Tunisia, Libya, Sudan, United Arab Republic, Yemen
B Periphery	Mali, Mauritania, Ghana, Upper Volta, Senegal, Dahomey, Niger, Ivory Coast, Republic of Guinea, Liberia, Sierra Leone, Togo, Cameroon, Nigeria, Gabon, Central African Republic
C Core	Canada, United States, United Kingdom, Netherlands, Belgium, Luxembourg, France, Switzerland, Spain, Portugal, West Germany, Austria, Italy, Yugoslavia, Greece, Sweden, Norway, Denmark, South Africa, Japan, Australia
C' Periphery?	Venezuela, Peru, Argentina, Uruguay, South Korea
D Semiperiphery	Cuba, Ireland, East Germany, Hungary, Cyprus, Bulgaria, Rumania, Kenya, Iran, Turkey, Iraq, Lebanon, Jordan, Israel, Soviet Union
D' Periphery?	Finland, Saudi Arabia, Taiwan, India, Pakistan, Burma, Ceylon, Malaysia, Philippines
E Periphery	Panama, Columbia, Ecuador, Brazil, Bolivia, Paraguay, Chile, North Vietnam
E' Periphery	Haiti, Dominican Republic, Mexico, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica
F Periphery	Jamaica, Trinidad and Tobago, Poland, Czechoslovakia, Malta, China (People's Republic), Mongolia, Nepal, Thailand, Cambodia, Laos, New Zealand, Iceland
F' Periphery	Albania, Syria, Kuwait, Afghanistan, North Korea, South Vietnam, Indonesia